TERRESTRIAL MOLLUSCS from (12) ~~11~~
ARCHAEOLOGICAL EXCAVATIONS IN THREE CAVES
NEAR [illegible], SOUTHWESTERN TAMAULIPAS, MEXICO

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TERRESTRIAL MOLLUSCS FROM ARCHAEOLOGICAL EXCAVATIONS IN THREE CAVES NEAR OCAMPO, SOUTHWESTERN TAMAULIPAS, MEXICO

By Robert J. Drake

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TERRESTRIAL MOLLUSCS FROM ARCHAEOLOGICAL EXCAVATIONS IN THREE CAVES NEAR OCAMPO, SOUTHWESTERN TAMAULIPAS, MEXICO

By Robert J. Drake*

ABSTRACT. Over 3,000 shells of a form of terrestrial mollusc [Bulimulus alternatus mariae (Albers)] were studied for changing environmental implications. They were from excavated archaeological sites in southern Tamaulipas, Mexico, from ca. 9,000 years B. P. to the post-contact period in deposits of eight culture periods (Infiernillo, Ocampo, Flacco, Guerra, Mesa de Guaje, Palmillas, San Lorenzo, and San Antonio). The sites (Tmc 247, Tmc 248, Tmc 274) were excavated by R. S. MacNeish in 1955-56. In numbers, extremes were: about 1,300 shells from San Lorenzo deposits (400 years duration) and about 20 shells from the Guerra-Mesa de Guaje deposits (1,400 years duration). In the Flacco, there were about 400 whole shells to about 300 fragmentary shells; in San Lorenzo, about 1,300 whole shells to about 20 fragmentary shells. From these preliminary studies involving the number of shell remains only, conditions of very dry, dry, wet, and very wet are in general postulated for cultural periods of the last ca. 9,000 years for the area.

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INTRODUCTION

There is already a considerable history of biological materials, uncovered in archaeological excavations, being studied to supply environmental information of several kinds. The present report is to make available to the archaeologist excavating the specimens an account of their numbers (actual and estimated) in connection with some available information as to the cultural framework of the sediments in which they were found in Mexico. A final report can be made after the ultimate archaeological report is available. As examples of the Recent fauna, molluscs from archaeological sites are valuable objects for study of the immediate histories of the now living fauna comprising bivalves, snails, and slugs of inland regions. Preliminary, and then later, final studies on other nonmarine shells from sites in Arid America have been recently published for eventual advantage of the regional archaeology concerned. Reference is made to study of shells from the Matty Canyon microregion in southeastern Arizona, the La Playa site in Sonora (Drake, 1959, 1960, and 1961), and the Llano Estacado sites in Texas and New Mexico (Wendorf, 1961).

Large terrestrial snails of the genus Bulimulus are found in northern Mexico and adjacent southern Texas; they have large populations and are found in considerable numbers in archaeological sites, especially caves and rockshelters. Many thousands

of them have been uncovered in open and cave sites in the general Mexican Border region, and many samples have been deposited in anthropological and natural history museums. Often, they seem to be the predominant shell remains (as with the Tamaulipas specimens here reported upon); in other instances, they are found along with snails of other groups and sometimes with different general habitat inferences.

In April of 1957, Dr. R. S. MacNeish of the National Museum of Canada turned over for study about 3,000 shells from his 1955-56 archaeological excavations in three caves near Ocampo, southwestern Tamaulipas. Full study facilities and funds for assistance were not available until the winter of 1959-60, although organization of the materials, with cross-checking of data supplied by Dr. MacNeish, was done in 1957; when it came time to start the presently reported phases of the study, it was apparent that the 1957 work (supported in part with a grant-in-aid from the Bache Fund) had been beneficial. The shells, about 170 lots of Bulimulus alternatus mariae (Albers) [see Fig. 1], were in 1957 given study numbers (2600-2757) and have been deposited in the National Museum of Canada molluscan collections (within numbers 8400-8557, 9840-9848).

This summation has been made for use in further studies in Mexican archaeology, as the field of biological materials in archaeology is interdisciplinary (rather than inter-mural), with the archaeologists qualified to make the final syntheses.

DISCUSSION

It is not exactly understood why the Bulimulus shells were found deposited in situ in the cultural deposits in the three caves. Snail shells have been reported in human feces found in previous archaeological excavations in the nearby Sierra de Tamaulipas (MacNeish, 1958: 146); perhaps Bulimulus was eaten, and perhaps more during some cultural periods than others.

(Ethnographic literature and records can sometimes help us understand food preferences and taboos; the problem here for the region is: Were former people and animals and plants controlled by similar or the same ecological factors?)

The shells might have been brought into the caves by animals, by people, or been deposited by washing down with sediment from several types of habitats. General sedimentary picture(s) and different cultural matrices could probably eventually supply information especially helpful to paleozoological studies of the Bulimulus in mountainous Northeast Mexico.

That almost all of the shells came from Ocampo Cave (Tmc 248) argues for either someway a better site for Indians over a long time or that excavations were proportionally more complete for Ocampo Cave as against Romero Cave (Tmc 247) and Flacco Cave (Tmc 274). Or, shells were better preserved in Tmc 248. Shells from 6 of the 8 cultures are representative for Ocampo Cave; nothing designated for the Mesa de Guaje and Guerra cultures in Tmc 248

As shown in exploratory counts, there were many fragments of shells. It was decided that perhaps an "estimated total number" of shells from each culture might eventually point to additional overall environmental implications; also, that percentages of fragmentary shells in the deposits of each culture might be of interest to the archaeologists (see Tab. II).

Each lot of shells had been weighed separately by both whole shells and fragments; the number of whole shells in each lot was divided into the corresponding weight in shell fragments to obtain the average weight for each lot. The mean of the average weight for each lot was then determined; this was 0.8 grams. The weight of the fragments in each lot was then divided by the mean weight, and the result was taken to the nearest whole number above the determined value; this number was taken to represent the number of whole shells as represented by fragments. The "total number" of shells for the samples is shown in Tables I-III and Figures 2, 4, and 5.

Shells were weighed to 0.1 of a gram, using the same triple beam balance. They were brushed, inside and out, and resultant sediment was saved but not weighed. In handling, blackish shells (i.e., burnt) in general felt lighter and were more fragile; that is, unnaturally fragile when compared to the fragile unburnt and unblackened shells. Thickness of normal (i.e., whitish) shells seemed correlated with hardness; the most hard were yellowish. Fragments were mostly from the thinner shells (see Tab. II).

was forwarded for study. Do the other animal remains show this horizontal pattern? An abrupt change in the whole cultural picture may be indicated by a possible lack of Bulimulus in Ocampo Cave during Guerra-Mesa de Guaje times. That the estimated span for these two cultures is 1,400 years (3,800-2,400 B. P.) and that there may have been only 15 whole shells excavated (none in Ocampo Cave; 9 in Flacco Cave of Guerra time, 6 in Romero Cave of Mesa de Guaje time) may be climatically-biotically important as well as culturally (see Tab. I). Or, cultural change was because of change(s) in local climate, perhaps also the general biota and weather. This presumed lack of Bulimulus might easily show up in future excavations of the ca. 3,000 years B. P. zone and be an important marker (see Fig. 2).

Until additional study can be done with the measurable qualities of individual Bulimulus shells and the lots of shells occuring in associations with cultural and noncultural features in excavations, the only reliable mass of data to be dealt with for elucidation are counts of the numbers of "total" shells as given in Figures 2, 4, and 5. Their numbers seem to reflect, in part, what several others have presented as to general paleoecological change in Northeast Mexico (Martin and Harrell, 1957: 477; MacNeish, 1958: Table 30).

ACKNOWLEDGEMENTS

Dr. R. S. MacNeish not only made the Bulimulus and the measurements of sediment bulk available, but also waited patiently for the report on counts which was sent to him in early 1960. Dr. L. S. Russell (Director, National Museum of Canada) and Dr. I. McT. Cowan (Director, Zoological Museum of The University of British Columbia) made facilities available and showed interest in this segment of the study of the immediate history of the molluscan fauna of Northeastern Mexico. The Bache Fund of the National Academy of Sciences and the American Philosophical Society (through Penrose Fund grant-in-aid 2696 of 1959) helped provide necessary assistance. Miss J. L. Lanko, Mr. R. J. Hyslop, and Mr. N. A. M. Verbeek, zoology students, measured and weighed and otherwise helped at The University of British Columbia. Mr. J. R. Miketa assisted with counts and measuring at the University of Arizona. Additionally, I am indebted to Dr. A. H. Clarke, Jr., of the National Museum of Canada for good criticism of an earlier draft.

LITERATURE CITED

DRAKE, ROBERT J. (1959). Nonmarine molluscan remains from Recent sediments in Matty Canyon, Pima County, Arizona. Bull. So. Calif. Acad. Sci. 58: 148-154, pls. 43-44, tabs. I-III.

-----(1960). Nonmarine molluscan remains from an archaeological site at La Playa, northern Sonora, Mexico. Bull. So. Calif. Acad. Sci. 59: 133-137, pls. 42, 43.

-----(1961). Nonmarine molluscs from the La Playa site, Sonora, Mexico: 2. Bull. So. Calif. Acad. Sci. 60: 127-129.

MacNEISH, RICHARD S. (1958). Preliminary archaeological investigations in the Sierra de Tamaulipas, Mexico. Amer. Phil. Soc. Trans. (n. s.) 48 (6): 210 pp, 51 figs., 30 tabs., index.

MARTIN, PAUL S. and BYRON E. HARRELL. (1957). The Pleistocene history of temperate biotas in Mexico and Eastern United States. Ecology 38: 468-480, 15 figs., 2 tabs.

WENDORF, FRED. (Assembler). (1961). Paleoecology of the Llano Estacado, No. 1. 144 pp., 47 figs., 7 tabs. Fort Burgwin Research Center and Museum of New Mexico.

WHITAKER, THOMAS W., HUGH C. CUTLER, and RICHARD S. MacNEISH. (1957). Cucurbit materials from three caves near Ocampo, Tamaulipas. American Antiquity 22: 352-358, 6 figs., 1 tab.

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Fig. 1. - Bulimulus alternatus mariae (Albers).
Scale line = 5 mm.

TABLE I

YEARS (B.P.)	CULTURES	NUMBER OF YEARS DURATION OF CULTURES	N.M.C. SERIAL NUMBERS	COMBINED CUBIC FEET	"TOTAL" SHELLS	"TOTAL" SHELLS PER CUBIC FOOT OF SEDIMENT	LOCAL "CLIMATIC" INDICATIONS
200–500	San Antonio	300	8400–8431	600	207	2.90	Very dry
500–900	San Lorenzo	400	8432–8485	907	1359	0.67	Dry
1100–1800	Palmillas	700	8486–8490	300	512	0.58	Very wet
2400–3400	Mesa de Guaje	1000	8567	8	7	1.14	Wet
3400–3800	Guerra	400	8566	8	15	0.53	Wet
3800–4300	Flacco	500	8491–8499	600	747	0.80	Dry
4300–6000	Ocampo	1700	8500–8529	331	215	1.54	Very wet
7500–9000	Infiernillo	1500	8530–8565	309	336	0.92	Very wet

Bulimulus from Tmc 247, Tmc 248, and Tmc 274; numbers of shells, cubic feet of sediment, cultures, and local "climatic" indications.

TABLE II

CULTURES	YEARS B.P.	"TOTAL" NUMBER		WHOLE SHELLS	
		WHOLE SHELLS	FRAGMENTARY SHELLS	BLACK	WHITE
San Antonio	200-500	180	27	7	173
San Lorenzo	500-900	1340	19	139	1201
Palmillas	1100-1800	502	10	54	448
Mesa de Guaje	1750-2450	6	1	-	6
Guerra	3400-3800	9	6	2	7
Flacco	3800-4300	403	344	91	312
Ocampo	4300-6000	195	20	44	151
Infiernillo	7500-9000	310	26	39	271
TOTAL		2945	453	376	2569
			3398		2945

Bulimulus from Tmc 247, Tmc 248, and Tmc 274; numbers of whole and fragmentary shells and cultural periods.

TABLE III

CULTURE	NUMBER OF YEARS DURATION	"TOTAL" NUMBER OF SHELLS (WHOLE AND FRAGMENTARY)	AVERAGE SHELLS PER YEAR	TOTAL NUMBER* OF CUCURBITS	CUCURBIT SPECIMENS PER YEAR
San Antonio	300	207	0.685	175	0.585
San Lorenzo	400	1359	3.380	376	0.940
Palmillas	700	512	0.730	134	0.191
Mesa de Guaje	1000	7	0.007	138	0.138
Guerra	400	15	0.038	127	0.318
Flacco	500	747	1.490	132	0.264
Ocampo	1700	215	0.127	137	0.080
Infiernillo	1500	336	0.223	16	0.013
	6500	3398	(mean = 0.522)	1235	(mean = 0.190)

* Whitaker, Cutler, and MacNeish, 1951

Bulimulus and cucurbit remains from Tmc 274, Tmc 248, and Tmc 274; comparisons of numbers by cultures and per year.

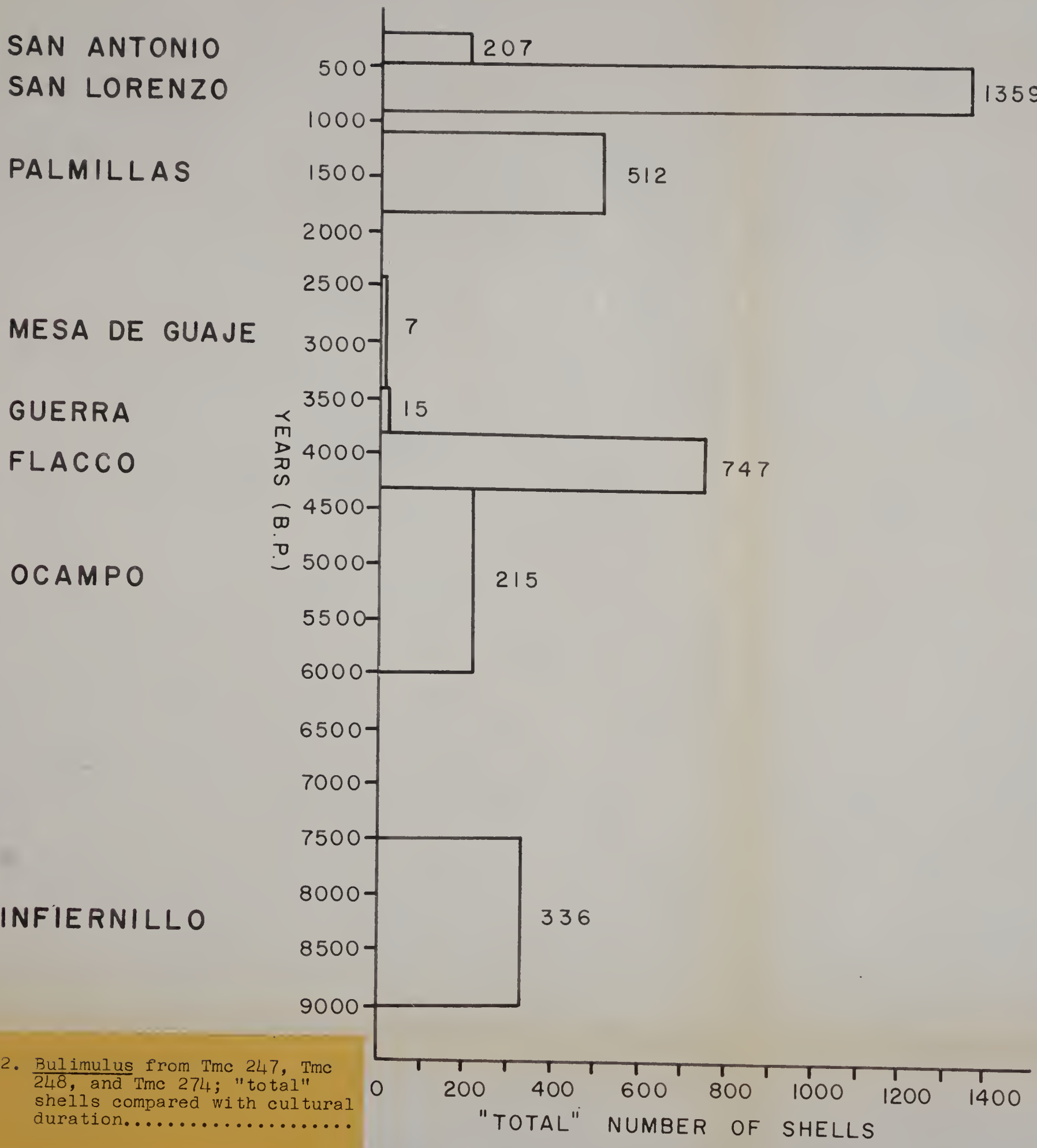
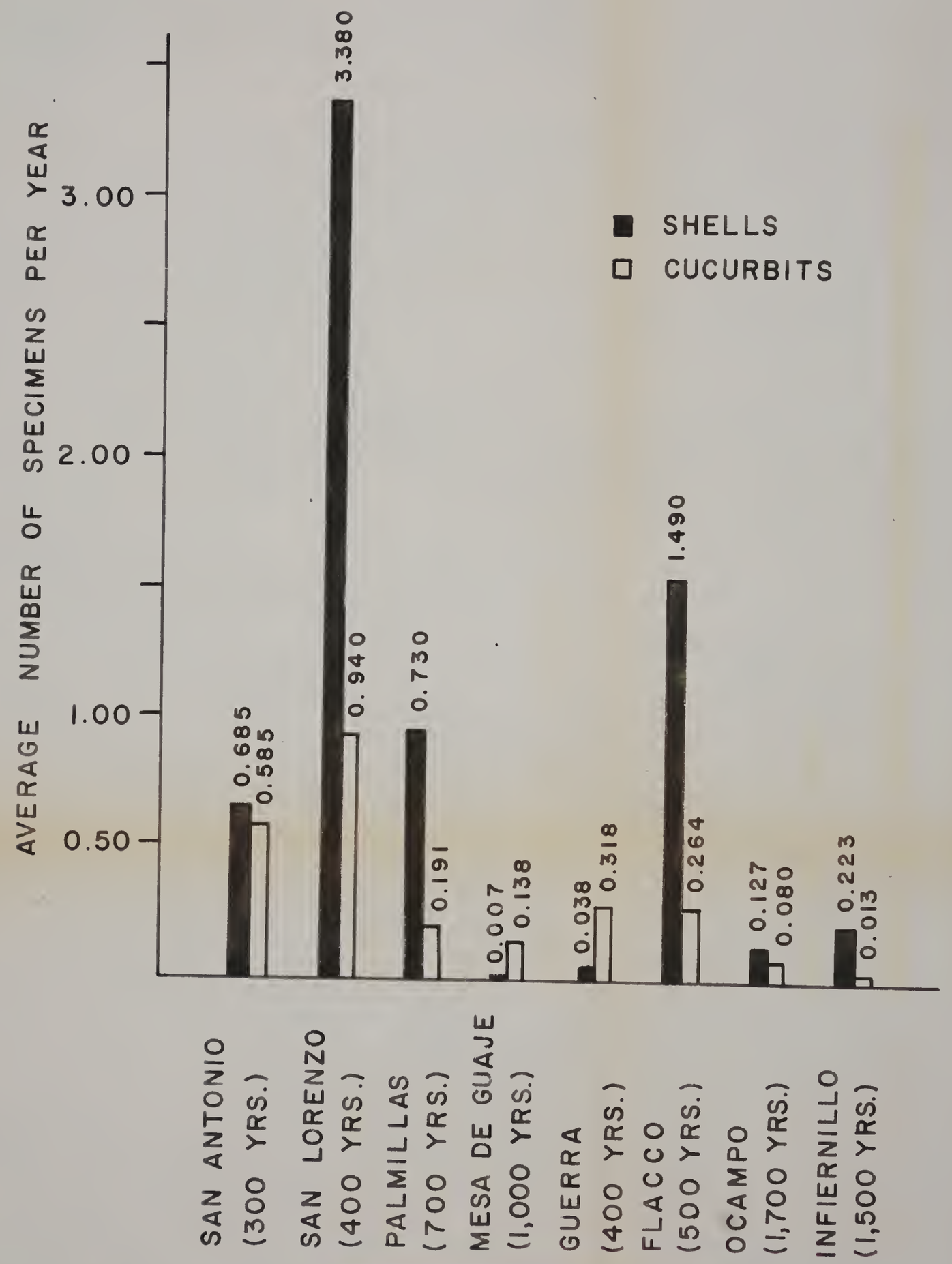


Fig. 2. Bulimulus from Tmc 247, Tmc 248, and Tmc 274; "total" shells compared with cultural duration.....



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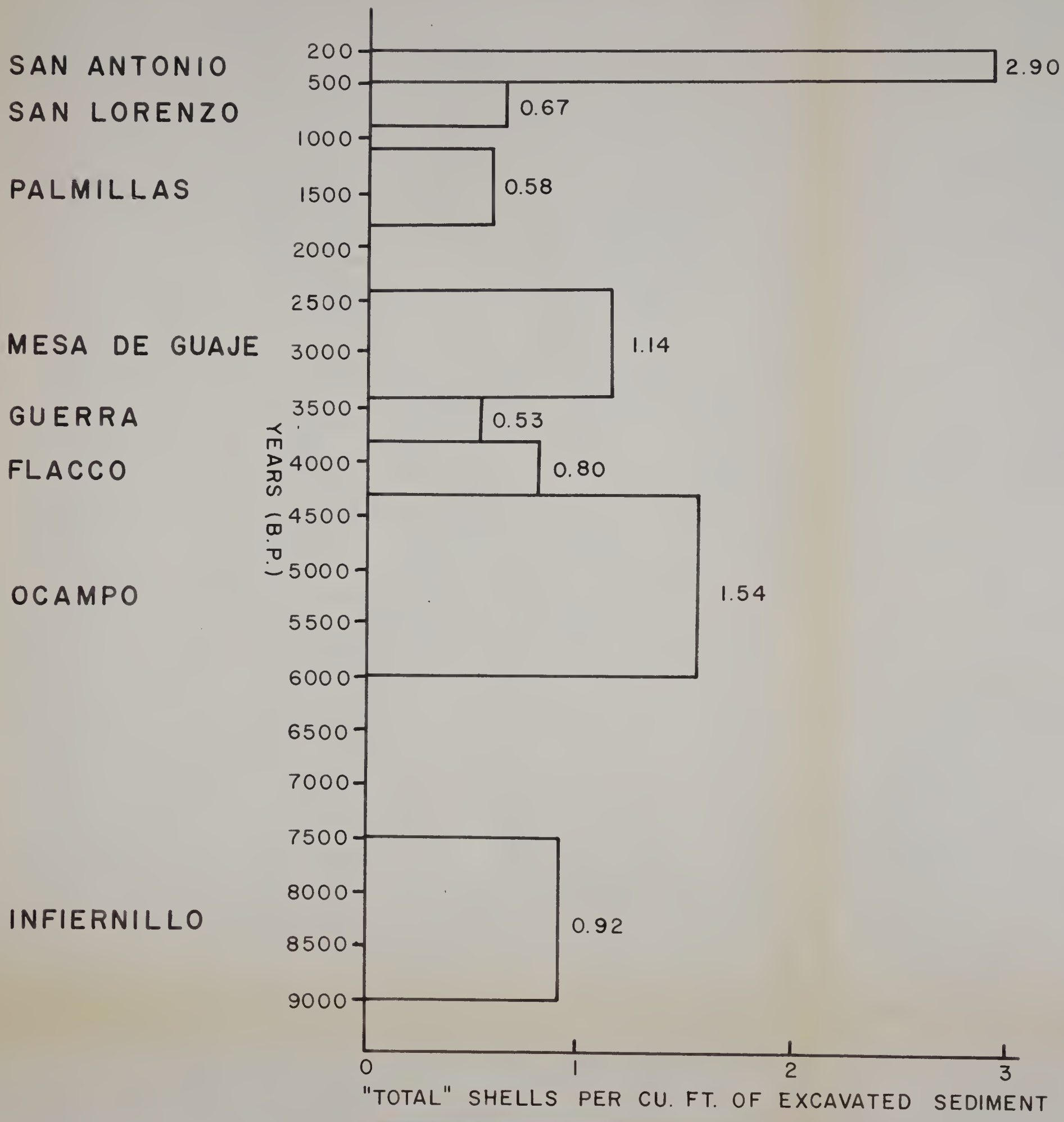

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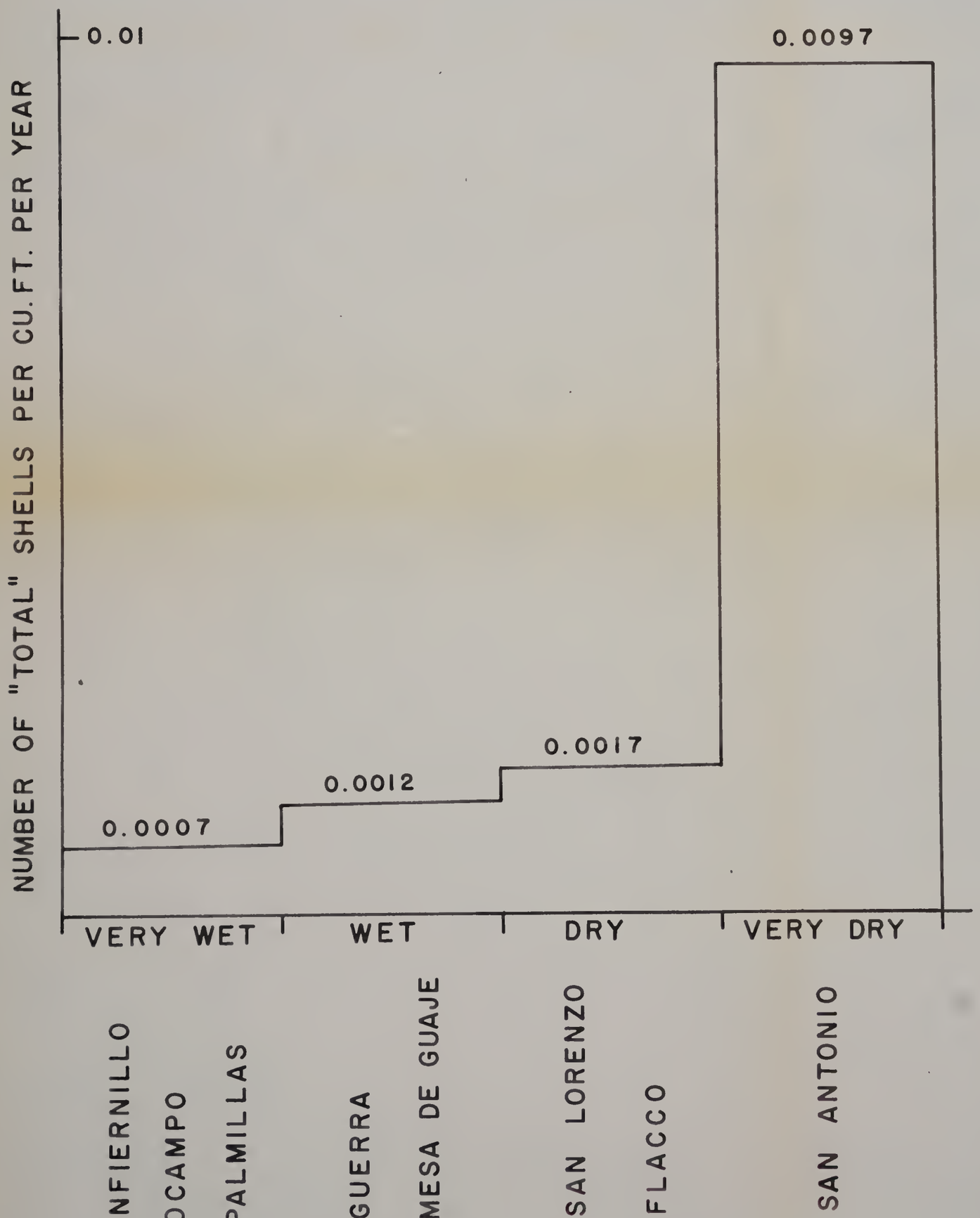

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